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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,040	02/19/2004	Tsugunori Notomi	201487/1024 (E2-001PCT-US	5624

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EXAMINER	
BABIC, CHRISTOPHER M	

ART UNIT	PAPER NUMBER
1637	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/782,040	NOTOMI ET AL.	
	Examiner	Art Unit	
	CHRISTOPHER M. BABIC	1637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 March 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *54-60* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *54-59* is/are rejected.

7)☒ Claim(s) *60* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/24/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of the Claims

Claim(s) 54-60 are pending. The following Office Action is in response to Applicant's communication dated March 19, 2008.

Claim Rejections - 35 USC § 112 - Indefiniteness - Withdrawn

Applicant's claim amendments are sufficient to overcome the rejection of claim(s) 54-59.

Claim Rejections - 35 USC § 102 - Maintained

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim(s) 54, 58, and 59 are rejected under 35 U.S.C. 102(b) as being anticipated by Cleuziat et al. (WO 95/03426 A2; 2 February 1995; 02.02.95) as evidenced by the English translation provided in Cleuziat et al. (U.S. 5,849,547).

With regard to claim(s) 54, Cleuziat teaches a method (*fig. 15; example 5, col. 33-35; col. 33, lines 35-45, col. 34, lines 60-col. 35, Cleuziat teaches an amplification*

reaction containing two inner primers, SEQ ID NO: 12,13, and two outer displacement primers, SEQ ID NO: 10,16, for example) comprising: A) mixing the following components 1) to 3) with sample nucleic acid as a template (*col. 33-35, SEQ ID NO: 1, for example*) 1) a primer set consisting of four distinct oligonucleotide primers, wherein: the first oligonucleotide primer comprises (i) a 3' terminal nucleotide sequence that anneals to a sample single-stranded nucleic acid molecule and serves as the origin of synthesis for synthesizing a first single-stranded nucleic acid molecule complementary at least in part to the sample single-stranded nucleic acid molecule and (ii) a 5' terminal nucleotide sequence that is complementary to an arbitrary region of the first single-stranded nucleic acid molecule (*col. 33-35, SEQ ID NO: 12, 5' terminal nucleotides 1-3 TCT, complementary to nucleotides 48-50 AGA, for example*); the second oligonucleotide primer comprises (i) a 3' terminal nucleotide sequence that anneals to the first single-stranded nucleic acid molecule prepared using the first oligonucleotide primer and serves as the origin of synthesis for synthesizing a second single-stranded nucleic acid molecule complementary at least in part to the first single- stranded nucleic acid molecule, and (ii) a 5' terminal nucleotide sequence that is complementary to an arbitrary region of the second single-stranded nucleic acid molecule (*col. 33-35, SEQ ID NO: 13, 5' terminal nucleotides 1-3 TCT, complementary to nucleotides 48-50 AGA, for example*); the third oligonucleotide primer comprises a nucleotide sequence which anneals to a region of the sample single-stranded nucleic acid molecule, wherein said region is located 3' to a region where the first oligonucleotide primer anneals and outside of a region defined by the outer nucleotides of the first oligonucleotide primer

(*col. 33-35, SEQ ID NO: 10, for example)*; and the fourth oligonucleotide primer comprises a nucleotide sequence which anneals to a region of the first single-stranded nucleic acid molecule, wherein said region is located 3' to a region where the second oligonucleotide primer anneal and outside of a region defined by the outer nucleotides of the first oligonucleotide primer (*col. 33-35, SEQ ID NO: 16, for example)*; 2) a DNA polymerase having strand displacement activity (defined by the outer nucleotides of the first oligonucleotide primer (*col. 33-35, MMLV reverse transcriptase, for example)*); and 3) one or more nucleotides which are used by the DNA polymerase to extend the primers (defined by the outer nucleotides of the first oligonucleotide primer (*col. 33-35, ATP, etc., for example)*); B) incubating the mixture at such a temperature that the nucleotide sequence constituting the first and third oligonucleotide primers can form stable base with the template (defined by the outer nucleotides of the first oligonucleotide primer (*col. 33-35, incubation, for example*).

With specific regard to the newly added step C, Cleuziat teaches amplification of a section of SEQ ID NO:1 (nucleotides 336-402), which contain complementary sequences linked alternately in a single-stranded chain (nucleotides 351-352, AA; nucleotides 358-359, TT, for example). Thus, the Cleuziat method necessarily synthesizes a nucleic acid having complementary sequences linked alternately in a single-stranded chain.

With regard to claim(s) 58, Cleuziat teaches a detector for detection of products (col. 27, lines 35-55, UV detection, for example).

With regard to claim(s) 59, Cleuziat teaches reverse transcription of RNA (col. 20, lines 45-65, for example).

Response to Arguments

Applicant's arguments have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., folding into a 3'stem/loop and initiating self-extension) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Claim Rejections - 35 USC § 103 - Maintained

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim(s) 55-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cleuziat et al. (WO 95/03426 A2; 2 February 1995; 02.02.95) as evidenced by the English translation provided in Cleuziat et al. (U.S. 5,849,547) as applied to claim(s) 54, 58, and 59 above, and further in view of Bloch (U.S. 5,972,618).

With regard to claim(s) 55-57, the methods of the previously applied reference(s) have been outlined in the above rejections. The previously applied reference(s) do not expressly teach the use of melting temperature regulators.

It is submitted that melting temperature regulators, i.e. Betaine, were well known in the art at the time the claimed invention was made as taught by Bloch. Bloch teaches high concentrations of Betaine (col. 12, lines 40-63, 2-3M, for example) are preferred PCR sensitivity enhancers because it improves polymerase-template interaction without enzyme inhibition (col. 4, lines 49-60, for example).

Thus, it would have been *prima facie* obvious to one of ordinary skill in the art at the time the claimed invention was made to add Betaine to the polymerase reactions of Cleuziat for the expected benefit of improved polymerase-template interaction without enzyme inhibition as taught by Bloch.

Response to Arguments

Applicant's arguments have been addressed in the response(s) set forth above.

Allowable Subject Matter

With regard to claim 60, the closest prior art, Cleuziat, does not teach or suggest formation of loops through the hybridization of a 5' terminal sequence of the first or second primer with the first single-stranded nucleic acid molecule. Thus, the claim is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

No claims are allowed.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M. Babic whose telephone number is 571-272-8507. The examiner can normally be reached on Monday-Friday 7:00AM to 4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on 571-272-0782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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